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10/036,135	11/07/2001	Yeshik Shin	594728113US	3390

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EXAMINER	
NGUYEN, STEVEN H D	
ART UNIT	**PAPER NUMBER**
2616	

DATE MAILED: 06/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/036,135	SHIN ET AL.	
	Examiner	Art Unit	
	Steven HD Nguyen	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35 and 40-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35 and 40-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

Pages 1-2, Para [0001], the applicant should insert the application number into the blanks.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-15 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. in the specification Para [00103] the applicant discloses a method for selecting a control packet to be transmitted if a data packet which stored in the buffer is less than a delay time. However, the applicant does not disclose a step of when stored ... determining .... Selecting the control packet as disclosed in claim 1.

4. Claims 1-15 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As claim 1, line 5, "include a control packet and a data packet" is vague and indefinite because it's unclear if they are the same as – a control packet or a data packet – at line 3. please clarify, so the meter and boundary of the claim can be determined.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 16 and 19-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Li (USP 5757771).

Regarding claim 16, Li discloses a method in a communications device (Fig 5b) for transmitting packets, the method comprising receiving packets in an order, each packet being a first packet type or a second packet type (Col. 5, lines 54-67, the switch stores each type of packets in each associated queue), transmitting the received packets in an order in which whether the packets are a first packet type or a second packet type (Col. 3, lines 30-44), unless the transmitting of a packet in the different order would delay the transmitting of a packet more than a certain amount of time (Fig 3, 302, 304, 310 and 308; See col. 9, line 13 to col. 12, line 61 or col. 4, lines 30-44).

Regarding claim 19, Li discloses the selecting includes applying a selection algorithm (priority-based selection) that gives preference to selecting control packets over data packets (col. 4, lines 30-44).

Regarding claims 20-22, Li discloses the communications device has multiple ports (Fig 5b, Ref 508 and 510), the packets are received via a single port (Fig 5b, Ref 508); received packets to be transmitted via the same port (Fig. 5B, Ref 510) and the packets are received via different ports (Fig 5B, Ref 508).

Regarding claim 23, Li discloses the communications device is a switch (Fig 5b) that connects host devices to data storage devices (Fig 5B which used to coupled host and storage).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-8, 12, 14-23, 25-30, 32 and 34-35 rejected under 35 U.S.C. 103(a) as being unpatentable over Burnett (USP 5703875) in view of Li (USP 5757771).

Regarding claim 1, Burnett discloses method in a communications device for transmitting packets (Fig 2) comprising receiving packets, each packet being a control packet or a data packet (col. 2, lines 1-9); storing the received packets in memory of the communications device (col. 2, lines 19-29); stored packets include a control packet and data packet (col. 2, lines 30-39); retrieving the selected packet from memory of the communications device and transmitting the retrieved packet (col. 2, lines 40-44). However, Burnett fails to disclose when the stored packets include a control packet and a data packet, determining whether transmitting of the control packet will delay the transmitting of the data packet more than a certain amount of time; when it is determined that the data packet will be delayed more than the certain amount of time, selecting the data packet; and when it is determined that the data packet will not be delayed more than the certain amount of time, selecting the control packet. In the same field of endeavor, Li discloses when the stored packets include a control packet and a data packet (Fig 5B, Ref 504), determining whether transmitting of the control packet will delay the transmitting of the data packet more than a certain amount of time (Fig 3, ref 308); when it is determined that the data packet will be delayed more than the certain amount of time, selecting the data packet (Fig 3, Ref 302-310); and when it is determined that the data packet will not be delayed more than the certain amount of time, selecting the control packet (Fig 3, Ref 302 and 304; See col. 9, line 13 to col. 12, line 61).

Since, a method and system for transmitting a low priority packet before the high priority packet is well known and expected in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply a method and system for transmitting a low priority packet before high priority packet if the waiting time of the low

priority packet is exceeds a delay threshold as disclosed by Li into the method and system of Burnett. The motivation would have been to provide a fairness service by providing a low priority packet with a minimum bandwidth so that the high priority packet is not continuously preempted the low priority packet.

Regarding claim 25-26, Burnett disclose a communications device (Fig 2) comprising a receive component that receives packets and stores the received packets in the memory (Fig 2, Ref 12 and 13), each packet being a control packet or a data packet, wherein control packets are stored in a control packet queue (Fig 2, Ref 12) and data packets are stored in a data packet queue (Fig 2, Ref 13); and a transmit component that retrieves the packets from the memory that transmits the retrieved packets in order of retrieval (col. 2, lines 19-44). However, Burnett fails to disclose the retrieving is associated with a selection algorithm that if each queue contains a packet the selection algorithm selects a control packet for retrieval unless a certain condition, when the selection of a control packet would delay the transmitting of a data packet more than a certain amount of time, is satisfied in which case the selection algorithm selects a data packet for retrieval. In the same field of endeavor, Li discloses the retrieving is associated with a selection algorithm (Fig 3) that if each queue contains a packet the selection algorithm selects a control packet (Fig 3, ref 302) for retrieval unless a certain condition, when the selection of a control packet would delay the transmitting of a data packet more than a certain amount of time (Fig 308), is satisfied in which case the selection algorithm selects a data packet for retrieval (See col. 9, line 13 to col. 12, line 61).

Since, a method and system for transmitting a low priority packet before the high priority packet is well known and expected in the art. Therefore, it would have been obvious to one of

ordinary skill in the art at the time of the invention was made to apply a method and system for transmitting a low priority packet before high priority packet if the waiting time of the low priority packet is exceeds a delay threshold as disclosed by Li into the method and system of Burnett. The motivation would have been to provide a fairness service by providing a low priority packet with a minimum bandwidth so that the high priority packet is not continuously preempted the low priority packet.

Regarding claim 2, Burnett discloses the memory of the communications device includes a portion for storing data packets (Fig 2, ref 13) and separate portion for storing control packets (Fig 2, ref 12).

Regarding claims 3 and 27, Burnett discloses each portion of the memory is a FIFO buffer (Fig 2).

Regarding claims 4 and 28, Burnett discloses the communications device has multiple ports and the selecting of the stored packet is performed for packets to be transmitted via the same port (Col. 2, lines 19-38).

Regarding claim 5, Burnett discloses the packets with a packet type of control include command packets (col. 1, lines 18-22).

Regarding claim 6, Burnett discloses the packets with a packet type of control include status packets (col. 1, lines 18-22).

Regarding claim 7, Burnett discloses the packets with a packet type of control include message packets (Fig 2, Ref 12, Col. 2, lines 55-60).

Regarding claims 8, 29 and 30, Burnett further discloses while transmitting a data packet, receiving a control packet; interrupting the transmission of the data packet;

transmitting the control packet; and after the control packet is transmitted, continuing with the interrupted transmission of the data packet (col. 2, line 61 to col. 3, line 17).

Regarding claims 12 and 32, Burnett discloses the communications device is a switch that connects host devices to data store devices (fig. 1 and col. 1, line 66 - col. 2, line 9).

Regarding claims 14 and 34, Burnett discloses the selecting includes selecting control packets before selecting data packets (col. 1, lines 43-48).

Regarding claims 15 and 35, Burnett discloses the selecting includes applying a selection algorithm (priority-based selection) that gives preference to selecting control packets over data packets (col. 1, lines 36-51).

Regarding claim 16, Burnett discloses a method in a communications device for transmitting packets, the method comprising receiving packets in an order, each packet being a first packet type or a second packet type (col. 1, lines 36-42), transmitting the received packets in an order in which whether the packets are a first packet type or a second packet type (col. 1, lines 36-51 and col. 2, lines 19-45). However, Burnett fails to disclose unless the transmitting of a packet in the different order would delay the transmitting of a packet more than a certain amount of time. In the same field of endeavor, Li discloses unless the transmitting of a packet in the different order would delay the transmitting of a packet more than a certain amount of time (Fig 3, 302, 304, 310 and 308; See col. 9, line 13 to col. 12, line 61).

Since, a method and system for transmitting a low priority packet before the high priority packet is well known and expected in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply a method and system for

transmitting a low priority packet before high priority packet if the waiting time of the low priority packet is exceeds a delay threshold as disclosed by Li into the method and system of Burnett. The motivation would have been to provide a fairness service by providing a low priority packet with a minimum bandwidth so that the high priority packet is not continuously preempted the low priority packet.

Regarding claims 17-18, Burnett discloses the first packet type is a data packet and the second packet type is a control packet and control packets are transmitted before data packets (col. 1, lines 36-51).

Regarding claim 19, Burnett discloses the selecting includes applying a selection algorithm (priority-based selection) that gives preference to selecting control packets over data packets (col. 1, lines 36-51).

Regarding claim 23, Burnett discloses the communications device is a switch that connects host devices to data storage devices (Fig. 1 and col. 1, line 66 - col. 2, line 9).

Regarding claims 20-21, Burnett discloses the communications device has multiple ports (Fig 1), the packets are received via a single port (Fig. 1, Ref 23); and the selecting of the stored packets is performed for packets to be transmitted via the same port (Fig. 1, ref 23).

Regarding claim 22, Burnett discloses the packets are received via different ports (Fig 1, ref 23).

9. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burnett and Li in view of Ellis (USP 5497371).

Regarding claim 9, Burnett and Li fail to disclose each packet has a header and the continuing includes transmitting a header corresponding to the interrupted portion of the data

packet. in the same field of endeavor, Ellis discloses continuing includes transmitting a header corresponding to the interrupted portion of the data packet (col. 2, line 55-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply a method and system for attaching a header to the remaining part of the packet as disclosed by Ellis into the system and method of Burnett and Li. The motivation would have been to protect the interrupted packet.

10. Claims 13, 24 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnett/Li as applied to claims 1, 16 and 25 above, and further in view of Howe (USP 20030189922).

Regarding claim 13, 24 and 33, Burnett/Li fail(s) to disclose the communications device is part of a storage area network. However, Howe teaches a communications device (Fig. 9, an integrated layer one switch having similar functions as disclosed in claim 1) is part of a storage area network (par. 0077). Therefore, as was taught by Howe, it would have been obvious to have the communications device of Burnett/Li configured as part of a storage area network in order to provide a variety of applications for the packet-based communications network using the method of packet ordering based on the packet type.

11. Claims 10-11 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnett and Li as applied to claims 1 and 25 above, and further in view of Cidon (USP 5343473).

Regarding claim 10, Burnet and Li fail to disclose continuing transmitting includes transmitting the remainder of the data packet without transmitting a new header. However, Cidon discloses continuation of a data packet transmission after an interruption of a control packet can

be done by transmitting the remainder of the data packet without a new header (Fig 2, Ref 20h discloses the remainder of packet is transmitting without header).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to apply a step of continuing transmitting of the remainder of the data packet without transmitting a new header as disclosed by Cidon into Li and Burnet's method since an advantage of doing so is to maintain the integrity of data packets before and after the interruption made by the control packet.

Regarding claims 11 and 31, Burnett discloses the interrupting of the transmission includes transmitting a control message to preempt any data message currently transmitted and continuing the interrupted transmission by reverting the crossbar state to resume data message (col. 3, lines 7-17). Burnett and Li differ from the claimed invention in that he does not teach transmitting a preempt primitive and a continue primitive before and after the interruption, respectively. However, Cidon discloses a method and system for transmitting a preempt primitive and a continue primitive before and after the interruption, respectively (Fig 2, Ref 20C, preempt on and 20G is preempt off and the remainder of packet 20b will be transmitting, Col. 5, lines 56 to col. 6, lines 8).

Since, Burnett suggests the use of start and end of message and preemption indicator. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to apply a preempt primitive and a continue primitive before and after the interruption, respectively as disclosed by Cidon into the system and method of Burnett and Li in order to inform the receiving side of the start and ending of the interruption prioritized by the control packet.

12. Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (USP 5757771).

Li fails to disclose the type of packet is one of control or data packet wherein control packet is preferred over data packet when transmitting via a switch. However, the examiner take an official notice that a method and system comprising control packet and data packet wherein control packet is transmitted before data packet is well-known and expected in the art at the time of invention was made. Therefore, it would have been obvious to one of ordinary skill in the art to apply this method into the teach of Li. The motivation would have been to maintain the quality of the system.

13. Claims 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boggs (USP 5959994) in view of Burnet (USP 5703875).

Regarding claims 40-41, Boggs discloses a method in a communications device being a switch (Fig 1, ref 190) for transmitting packets (Fig 5B, Ref 522) to a storage device (Fig 1, Ref 122) in a storage area network (Fig 1, Ref 100) wherein the packet is received from a host (Fig 1, Ref 110), the method comprising receiving a data packet indicating data to be written to the storage device of the storage area network (Fig 5B, Ref 534); receiving a control packet indicating a request for data to be read from the storage device of the storage area network (Fig 5b, Ref 538). However, Boggs fails to disclose when neither the received data packet and the received control packet has been sent, sending the received control packet to the storage device before sending a received data packet regardless of the order of having received the packets, so that the storage device can start reading the data of the storage device before receiving the data of the data packet and so that the control packet is not delayed by a data packet. In the same field

of endeavor, Burnett discloses a method and system for when neither the received data packet and the received control packet has been sent, sending the received control packet to the storage device before sending a received data packet regardless of the order of having received the packets so that the control packet is not delayed by a data packet (Col. 2, lines 1-44).

Since, Boggs suggests a flow control method which uses priority and Burnett suggests the use of priority for controlling the transmitting packets that have different priorities. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply a method and system for transmitting a high priority packet over low priority packet as disclosed by Burnett into the method and system of Broggs. The motivation would have been to improve control and data network.

Regarding claim 42, Burnett discloses the communications device is a switch with multiple ports (Fig 1), packets to be transmitted via the same port (Fig. 1, ref 23).

Regarding claim 43, Burnett further discloses while sending a data packet, receiving a control packet; interrupting sending of the data packet; sending the control packet; and after the control packet is send, continuing with the interrupted transmission of the data packet (col. 2, line 61 to col. 3, line 17).

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Youngho Lim (IEEE) discloses a method and system for transmitting low priority packet before high priority packet; if the low priority excess delay threshold.

Hui Yao (IEEE) discloses a method and system for transmitting low priority packet before high priority packet; if the low priority excess delay threshold.

Chong (USP 63706050) discloses a switch based scalable performance storage.

Wilson (USP 7031904) discloses a method and system for retrieving and writing the data into a storage device via a switch.

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven HD Nguyen whose telephone number is (571) 272-3159. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on (571) 272-3134. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Steven HD Nguyen
Primary Examiner
Art Unit 2616
June 12, 2006